

Stock Market Bubbles

Some Historical Perspective

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1 Introduction

In this chapter we examine peak to peak percentage changes in the S&P composite stock price index involving new historic highs which are separated by cumulative declines amounting to three percent or more. The stock market took its sharpest plunge in five months on the morning of December 6, 1996 after Fed chairman Greenspan raised the specter of “irrational exuberance” on Wall Street. And on February 26, 1997 in a speech prepared for the Senate Banking Committee Greenspan again warned investors about the possibility of an over valued market. His first warning followed a peak to peak gain for the S&P index of 15.1 percent without a correction amounting to three percent or more and his second warning came after a peak to peak gain of 7.8 percent without a correction of this magnitude.

The objective of this exercise is to provide some historical perspective and also test the efficient market hypothesis by examining economic and financial environments or conditions that might enable one to do a better job of discriminating between small and large “bubbles” and between bubbles that are separated by relatively small “corrections” and major stock market crashes. If the percentage changes in the S&P index from one bubble peak to the next are sufficiently small, on the average, one can expect modest trading profits from a simple strategy of selling a portfolio similar to the S&P index

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after it has recovered to a new historic high and repurchasing the index after the next cumulative decline amounting to three percent or more. At that point one would really like to be able to determine whether the decline in stock prices is likely to be a minor correction or the beginning of a major bear market.

2 Bull Markets In Perspective

Since the S&P index was first computed on a daily basis in 1928 there have so far been eleven occasions when it lost 13.9 percent or more of its value after climbing to a new historic high. After the S&P index finally recovered from these major bear markets and achieved at least one more new historic high there have always been at least three minor declines or corrections of from three to 10.6 percent (followed by a recovery to yet another new historic high) before the stock market entered a more pronounced bear market of greater severity. See column (4) of Table 1.

Five of the eleven bull markets with new historic highs for the S&P index in the post World War II period ended on the fourth decline of three percent or more and two bull markets on the fifth decline. In 1996 the US stock market finally broke the 1985-87 bull market record of 12 minor peak to trough declines of from three to 9.4 percent before a major crash. The worst decline during the longer lasting bull market of 1991-97 has so far only amounted 8.9 percent from February 2, 1994 to April 11 of the same year.

The most impressive aspect to the bull market of 1991-95 is its subdued character prior to the record setting peak to peak gain of 29 percent during 1995. The bubble which peaked out on February 2, 1994 established a new all time first peak to last peak trading day duration record of 116 days but only increased a modest 5.63 percent above the preceding new high bubble peak which occurred on March 10, 1993.

On December 13, 1995 this record was broken with a series of 77 new historic highs for the S&P composite spread over a 210 day trading period without a correction of three percent or more. The 29 percent peak-to-peak gain associated with this bubble was more than ten percentage points higher than the previous record of 18.8 percent which was established during the bull market of 1985-87.

The 1991-96 bull market has already established another new all time

duration record of more than six years from its first new high on February 13, 1991. The previous record for a new high bull market without a correction amounting to 13.9 percent or more was only about 2 and 2/3 years from January 21, 1985 to August 25, 1987.

It is not easy to predict the demise of a bull market. The data in Table 1 would suggest, however, that bull markets are more likely to end after a relatively small peak-to-peak gain in column (3) than after a spectacular series of new historic highs that have been achieved without an intervening decline amounting to three percent or more. There have so far only been two cases—the bull markets of 1967-68 and 1980 where the last peak to peak gain in stock prices was the largest bubble in that bull market.

Further evidence in support of the conclusion that new high bull markets usually don't end abruptly can be inferred from the number of trading days shown in column (5) which have supported the new high portion of each bubble. None of the major bull markets in Table 1 have (so far) ended after the record number of trading days (for the most enduring bubble in that particular bull market) without a cumulative decline of three percent or more. The tendency for major bull markets to “fade away” instead of ending on a big bubble, or a spectacular series of new historic highs, makes it far more difficult to define an optimal trend chasing strategy than to compute the profits which “might have been obtained” as a result of simpler policies of “buying low and selling high”.

3 A Trading Strategy Based on Stock Market Volatility

When the average percentage gain from one bubble peak to the next bubble peak in column (3) of Table 1 is less than, or not very much greater than three percent, it will be profitable, on the average, for a tax exempt investor in a no load mutual fund similar to the S&P index to liquidate his or her portfolio at the end of the day the S&P index first recovers to a new high (after experiencing a cumulative dip of three percent or more), put the proceeds in a money market fund, and stay out of the equity market until the end of the day the S&P index has again experienced a cumulative decline amounting to at least three percent.

On March 8, 1993, for example, the S&P index closed at a new historic high of 454.71 after recovering from a cumulative dip amounting to about 3.9 percent following the preceding new high peak of 449.56 which had occurred on February 4. Selling a portfolio similar to the S&P index on March 8 would have been a bit premature since the index achieved another new high of 456.33 on March 10. The S&P index then proceeded to drift lower. On April 2 it lost 8.91 points and closed at 441.39. At that closing value the S&P index was down 3.3 percent from the last new high peak on March 10 and was about 2.9 percent lower than our assumed selling price of 454.71 on March 8. The repurchase discount of 2.9 percent from a strategy of transacting at end of the day closing prices, in this example, is about twice as great as the discount that could have been obtained from an open order strategy of selling the S&P index when it first equaled the peak value for the preceding bubble and repurchasing after a cumulative decline of exactly three percent.

From this example it should be clear that one really needs more information than is actually provided in Table 1 to compute the gains and losses associated with an end of the day trading strategy. The additional information is provided in Tables 2 and 3 for two trading strategies.

It is interesting, in any event, to try to determine what kinds of economic and financial environments are likely to create the caution and anxiety that will produce small bubbles (or percentage gains from one bubble peak to the next bubble peak) and make it worth while to get out of the market, on the average, or at least refrain from buying a portfolio similar to the S&P index after it has recover from a cumulative decline of three percent or more and achieved a new historic high.

Devising a trading strategy of this type that will outperform a policy of buy and hold is not an easy matter. An investor who exited the market after every first new high and repurchased the S&P index after the first cumulative dip of three percent would have experienced a lot of ups and down and gone almost no where from September 22, 1954 to February 14, 1995. The investor's net gain, before taxes and transaction costs, would have only been a paltry 6.6 percent compared to a more spectacular gain of 1408.0 percent for a policy of buy and hold.

While most investors are probably well advised to ignore market timing approaches to stock market participation, there are a few trading strategies that would have outperformed buy and hold—if we ignore taxes and transaction costs. One hypothesis, which was advanced by Renshaw in (1991)

is that new high trading strategies work best in a volatile market. Greater volatility, other things equal, will produce more end of the day breakage above the preceding bubble peak and below the minimum decline required for repurchase. In so doing it will accentuate the gain to be expected from an asymmetric relationship between percentage gains and losses. A three percent decline from say 100 to 97, for example, requires a recovery of a little over 3.09 percent just to get back to 100.

One indicator of stock market volatility is the percentage gain in the S&P index the day it first recovers to a new historic high. For the 27 cases from 9/7/29 to 7/5/96, when the first daily recovery gain to a new historic high was equal to 1.1 percent or more, it would have been possible (for a tax exempt investor with no transaction costs) to obtain 46.6 percent more price appreciation, than under a policy of buy and hold, by selling a portfolio similar to the S&P at the end of that day and repurchasing the portfolio at the end of the day the S&P index first experienced another cumulative new high decline amounting to three percent or more.

An investor who followed this trading strategy by selling a portfolio similar to the S&P index on September 14, 1996—after the new high recovery from the nerve racking correction of 7.6 percent from May 24 to July 24—would have suffered a loss of 7.2 percent or more compared to a policy of “buy and hold”. The exuberant bull market of 1995-97, in any event, has ruined a lot of market timing strategies.

The 1.1 percent or more gain required on the first recovery day to measure volatility and trigger a sale was chosen in an attempt to maximize the cumulative advantage to be obtained from this type of “three percent” switching strategy. See those peak to peak gains in column (3) of Table 1 which are identified with a \$ sign.

Most of the more profitable volatility switches involving a first new high daily gain of 1.1 percent or more have occurred since the invention of stock index futures and options in 1982. These innovations have made it easier and more profitable for traders and speculators to “short” an over valued market. Lots of volatility associated with the first four bubbles in a bull market may be indicative of a near term crash. The three bull markets with three or more dollar signs attached to the first four bubbles (the 1980, 1982-83 and 1989-90 bull markets) all ended on the bursting of the fourth bubble.

4 Bubble Size In Relation to Earnings and Dividends

There are a number of other environments where modest profits could have been obtained, on the average, by employing a three percent or more switching strategy. One of the most publicized indicators of an “over valued market” is a dividend yield for the S&P index of three percent or less (Renshaw 1990 and 1992). This indicator, however, has not worked very well in recent years. See Table 2.

The poor performance of a low dividend yield exit strategy, by itself, during the bull market of 1995, however, makes it clear that traders should also keep a close eye on what is happening to earnings. From the fourth quarter of 1993 to the fourth quarter of 1994 the quarterly earnings associated with the *S&P* index increased 65.3 percent. This was the largest fourth quarter to fourth quarter increase in corporate earnings since 1946. The explosive increase in earnings helped to lower the P/E ratio from 21.3 at the end of 1993 to a more normal 15.0 at the end of 1994. The expectation that earnings would continue to increase at a rapid rate set the stage for one of the most remarkable bubbles in stock market history.

In a world where it has become fashionable for many corporations to use their earnings to buy up other companies, or repurchase their own stock, it is reasonable to suppose that high price/earnings ratios may be a more reliable indication of overvaluation than low dividend yields. For the ten cases where the P/E ratio for the S&P index at the end of the preceding quarter was in excess of 20.50 one could have obtained eleven percent more price appreciation with a first new high sale and buy back strategy after the next decline of three percent, than under a buy and hold policy.

A crash indicator threshold of 20.50 for the P/E ratio was first proposed by Renshaw in (1990). Since then we have had seven additional out of sample cases of new high bubbles following a P/E ratio in excess of this threshold. The average discount to be obtained from exiting the market after a P/E ratio of 20.50 or more is enhanced somewhat, however, if one only considers the six cases where the dividend yield was equal to 3.0 percent or less. See those changes in the value of the S&P index in column (4) of Table 3 that are identified with an asterisk.

5 Large Corrections

The most severe “correction” in Table 1 is the 10.6 percent decline in the S&P index from September 23 to October 11, 1955 which contained a one day drop in stock prices amounting to 6.6 percent on September 26, following President Eisenhower’s heart attack.

There have been eight large corrections in major bull markets involving declines of from 7.9 to 10.6 percent. For the seven resolved cases an investor could have always sold a portfolio similar to the S&P index after the first day of recovery to a new historic high and then repurchased the same portfolio at a discount of at least 11.8 percent during the next stock market crash.

Whether mega buck profits from this kind of trading strategy will continue to occur in the future is one of the more interesting questions to be resolved with the passage of time. While the goal of most market timers is to avoid large corrections and market crashes, the out of sample history of crash indicators that would have produced large trading profits in the past is not very encouraging (Renshaw, 1995a).

One reason for at least hoping that the rather spectacular bubble which emerged after the 8.9 percent correction of 1994 won’t be followed by an horrendous crash, is evidence suggesting that the stock market is more stable now than it used to be (Renshaw 1995b). The three smallest annual high/low ratios for the S&P index were all recorded in the 1992-94 period. There is also the prolonged nature of the 1991-96 new high bull market which suggests that stock market crashes in the midst of prosperity may not be occurring as frequently as was the case during the 1960s, 70s and 80s.

6 Stock Market Crashes in the Midst of Prosperity

Four of the ten completed new high bull markets in Table 1 ended as a result of stock market crashes in the midst of prosperity. All of these crashes (the debacles of 1962, 1966, 1984 and 1987) were preceded by at least one new high, peak-to-peak gain of nine percent or more for the S&P index in column 3 of Table 1. This is the only characteristic of new high bull markets terminated by bear markets in the midst of prosperity (that we have discovered) that is not widely shared by the six (completed) new high bull markets which were

terminated by recessions. The implication would seem to be that crashes in the midst of prosperity can be explained, at least in part, by “excessive” optimism or speculative enthusiasm.

In the post World War II period there have been only eleven new high peak to peak gains in column (3) of Table 1 amounting to nine percent or more. Seven of these bubbles “broke” during quarters when the annualized growth of real GDP in 1987 dollars was over five percent or during quarters when the four quarter growth rate for real GDP was in excess of five percent.

Two of these cases occurred in 1987, before the October crash, when the economic growth rate had slowed to a more normal pace and the stock market was still imbued with a tremendous amount speculative enthusiasm. The largest bubble of all broke during the fourth quarter of 1995 after real GDP for the third quarter expressed in chain weighted dollars had increased at an annualized rate of 3.6 after increases of only .6 and .5 percent for the first two quarters.

It should be noted, however, that only one of these large new high bubbles, the 11.5 percent increase in stock prices from June 15, 1987 to August 25, was followed by a crash. The other nine bubbles only experienced minor corrections or declines ranging from a loss of 3.1 percent for the 1964 bubble to a loss of 6.9 percent for the 1983 bubble.

7 The Possibility of Another Recession

If one could have accurately anticipated years containing a recessionary peak in business activity that information would have been of considerable value in avoiding financial loss.

There have so far only been seven new high bubbles in the post 1953 period that occurred during years containing a recessionary peak in business activity. See those peak dates identified with a “P” in Table 1. Investors who exited the market in these years after the first new high and repurchased a portfolio similar the S&P after a closing dip of three percent or more could have obtained an average trading profit (before taxes and commissions) of 1.34 percent.

Larger gains could have been achieved by simply staying out of the market until it was clear that the US economy had slipped into another recession. Since the mild recession of 1960-61 the S&P composite stock price index has

consistently lost more of its value, measured on a monthly average basis, after a recessionary peak in business activity as defined by the National Bureau of Economic Research than before the peak (See Appendix).

The duration of business expansions has been increasing with the passage of time. The five business expansions from 1961-90 had an average duration of 60.8 months. This can be compared to an average duration of only 36.2 months for the first four expansions after World War II and an average duration of only 29 months for the 22 expansions from 1854-1945.

One of the problems that nervous investors face in relation to the business cycle is that economists have not had very much success at identifying recessionary peaks in business activity in close proximity to their occurrence (Siegel, 1994, p. 180).

There is a time honored rule of thumb that a recession will soon follow three consecutive declines in the Conference Board's index of leading economic indicators. The lead times for this signal, however, have ranged from only two months for the recessions of 1948-49 and 1953-54 to a grand total of 90 months for the three declines which occurred during the stock market crash of 1962.

In thinking about the possibility of a near term peak in business activity it should be appreciated that modern day recessions are not as severe as they used to be. During the recession of 1948-49 payroll employment declined by 5.2 percent and industrial production by ten percent. During the 1990-91 recession payroll employment experienced a dip of only 1.7 percent and industrial production only declined 4.2 percent.

It should also be appreciated that the recession prone auto industry and many other US corporations are now in better financial shape and are less dependent on domestic sales than was the case in 1990. If speculative enthusiasm does not lift price/earnings ratios to a dangerous level there is a possibility that the market's response to a near term recession might be more nearly a correction than an old fashioned crash.

8 Concluding Remarks

The relatively small stock market correction associated with the Fed's preemptive strike against the possibility of accelerating inflation in 1994 and the rather spectacular new high bubble of 1995 have tarnished the image of low

dividend yields and a number of other market timing signals. While most investors are probably well advised to follow the philosophy of Peter Lynch and Jeremy Siegel, by investing in stocks for the long run, it can be interesting and possibly rewarding to have an appreciation of how the market has behaved over long periods of time.

The stock market bubbles identified by new high peaks that are separated by cumulative declines of three percent or more in Table 1 are one of the easiest data bases to update and maintain. They can be used to measure the duration, stability and magnitude of both short lived and more prolonged bull markets. They can also be used to obtain a quick, rough approximation of the gains and losses that “might have been obtained” in connection with a much wider range of statistical indicators, investment timing and trading strategies than can possibly be evaluated in this study.

Our attempt to differentiate between small and big bubbles and between minor corrections and major crashes would strongly suggest that beating the market is not an easy matter. We are inclined, however, to stick with the notion that the jury is still out as to whether changes in the S&P composite stock price index resemble a random walk and are truly consistent with the efficient market hypothesis. The nice thing about our tables is that they provide readers with enough history and cases to be in a better position to make an independent judgment with regard to a profound idea that has revolutionized courses in economics and finance but will no doubt remain controversial, forever and ever.

References

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Table 1

Declines of Three Percent or More in the S&P 500 Stock Price Index After
it Has Achieved a New All Time High Since September 7, 1929

Date of Peak Trough		Value S&P Index Peak Trough (1) (2)		% Change S&P: Peak to Peak Trough (3) (4)		Trading Day Duration (5)n
9/ 7/29	6/ 1/32	31.92	4.40**	—	-86.2	
10/ 6/54	10/29/54	32.76	31.68	2.6	- 3.3	10
1/ 3/55	1/17/55	36.75	34.58	12.2\$	- 5.9Φ	40H
3/ 4/55	3/14/55	37.52	34.96	2.1\$	- 6.8	19
4/21/55	5/17/55	38.32*	36.97	2.1	- 3.5	7
7/27/55	8/10/55	43.76	41.74	14.2	- 4.6Φ	37
9/23/55	10/11/55	45.63	40.80	4.3	-10.6	13
11/14/55	1/23/56	46.41	43.11	1.7\$	- 7.1	0
3/20/56	5/28/56	48.87	44.10	5.3\$	- 9.8	7
8/ 2/56	10/22/57	49.74	38.98**	1.8	-21.6	13
11/17/58	11/25/58	53.24	51.02	7.0	- 4.2Φ	37
1/21/59	2/ 9/59	56.04	53.58	5.3\$	- 4.4Φ	27
5/29/59	6/10/59	58.68	56.36	4.7	- 4.0Φ	61H
8/ 3/59	10/25/60	60.71*	52.30**	3.5	-13.9	22
4/17/61	4/24/61	66.68	64.40	9.8	- 3.4Φ	54H
5/17/61	7/18/61	67.39E	64.41D	1.1	- 4.4	2
9/ 6/61	9/25/61	68.46E	65.77D	1.6	- 3.9	22
12/12/61	6/26/62	72.64E*	52.32D**	6.1	-28.0	35
10/28/63	11/22/63	74.48	69.61	2.5	- 6.5	39
5/12/64	6/ 8/64	81.16	78.64	9.0	- 3.1Φ	101H
7/17/64	8/26/64	84.01	81.32	3.5	- 3.2Φ	15
11/20/64	12/15/64	86.28*	83.22	2.7	- 3.5	17
5/13/65	6/28/65	90.27	81.60	4.6	- 9.6	81
2/ 9/66	10/ 7/66	94.06	73.20**	4.2	-22.2	94
5/ 8/67	6/ 5/67	94.58	88.43	.6	- 6.5	2
8/ 4/67	8/28/67	95.83	92.64	1.3	- 3.3	4
9/25/67	3/ 5/68	97.59	87.72	1.8\$	-10.1	8
7/11/68	8/ 2/68	102.39*	96.63	4.9	- 5.6	44H
11/29/68	5/26/70	108.37	69.29**	5.8	-36.1	38
4/12/72	5/ 9/72	110.18	104.74D	1.7	- 4.9	24
5/26/72	7/20/72	110.66	105.81D	.4	- 4.4	2
8/14/72	10/16/72	112.55	106.77D	1.7	- 5.1	4
12/11/72	12/21/72	119.12*	115.11D	5.8	- 3.4Φ	26H
1/11/73P	10/ 3/74	120.24	62.28D**	.9	-48.2	6

Table 1 Contd.

Date of		Value S&P Index		Percentage Change S&P		Trading Day
Peak	Trough	Peak	Trough	Peak to Peak	Peak to Trough	Duration
		(1)	(2)	(3)	(4)	(5)n
8/22/80P	8/28/80	126.02	122.08	4.8\$	- 3.1Φ	26H
9/22/80P	9/29/80	130.40	123.54	3.5\$	- 5.3	13
10/15/80P	10/30/80	133.70	126.29	2.5\$	- 5.5	7
11/28/80P	8/12/82	140.52*	102.42**	5.1\$	-27.1	11
11/ 9/82	11/23/82	143.02	132.93	1.8\$	- 7.1	4
1/10/83	1/24/83	146.78	139.97	2.6\$	- 4.6	2
6/22/83	8/ 8/83	170.99	159.18	16.5	- 6.9Φ	94H
10/10/83	7/24/84	172.65*	147.82**	1.0\$	-14.4	0
2/13/85	3/15/85	183.35	176.53	6.2\$	-3.7Φ	17
6/ 6/85	6/13/85	191.06	185.33	4.2	- 3.0Φ	29
7/17/85	9/25/85	195.65	180.66	2.4	- 7.7	13
1/ 7/86	1/22/86	213.80*	203.49	9.3\$	- 4.8Φ	37
3/27/86	4/ 7/86	238.97	228.63	11.8	- 4.3Φ	37
4/21/86	5/16/86	244.74	232.76	2.4\$	- 4.9	3
5/29/86	6/10/86	247.98	239.58	1.3\$	- 3.4	2
7/ 2/86	7/15/86	252.70	233.66	1.9	- 7.5	5
9/ 4/86	9/29/86	253.83	229.91	.4\$	- 9.4	6
12/ 2/86	12/31/86	254.00	242.17	.1\$	- 4.7	0
3/24/87	3/30/87	301.64	289.20	18.8	- 4.1Φ	53H
4/ 6/87	5/20/87	301.95	278.21D	.1	- 7.9	0
8/25/87	12/ 4/87	336.77	223.92**	11.5	-33.5	50
9/ 1/89	9/14/89	353.73	343.16	5.0\$	- 3.0Φ	27H
10/ 9/89	1/30/90	359.80	322.98	1.7\$	-10.2	4
6/ 4/90P	6/26/90	367.40	352.06	2.1\$	- 4.2	4
7/16/90P	10/11/90	368.95*	295.46**	.4	-19.9	0
4/17/91	5/15/91	390.45	368.57	5.8	- 5.6Φ	43
8/ 6/91	8/19/91	390.62	376.47	.0\$	- 3.6	0
8/28/91	10/ 9/91	396.64	376.80	1.5	- 5.0	4
11/13/91	11/29/91	397.41E*	375.22	.2	- 5.6	1
1/15/92	4/ 8/92	420.77E	394.50	5.9	- 6.2	14
8/ 3/92	8/24/92	425.09E	410.72	1.0\$	- 3.4	3
9/14/92	10/ 9/92	425.27E	402.66D	.0\$	- 5.3	0
2/ 4/93	2/18/93	449.56E	431.90	5.7	- 3.9Φ	51
3/10/93	4/26/93	456.33E	433.54D	1.5\$	- 5.0	2
2/ 2/94	4/ 4/94	482.00E	438.92D	5.6	- 8.9	116
12/13/95	1/10/96	621.69	598.48D	29.0	- 3.7Φ	210H
2/12/96	4/11/96	661.45	631.18D	6.4	- 4.6Φ	10
5/24/96	7/24/96	678.51	626.65D	2.6\$	- 7.6	9
11/18/96	12/16/96	757.03	720.98D	11.6G\$	- 4.8Φ	51
2/18/97	4/11/97	816.29	737.65D	7.8G	-9.6	26
8/6/97	8/29/97	960.32	899.47	17.6\$	-6.3Φ	65
10/7/97	10/27/97	983.12	876.99	2.4	-10.8	3
12/5/97	1/09/98	983.79	927.69	0.1\$	-5.7	0

(5)n. Number of additional trading days after the recovery to a first new high to the last new high or peak date.

* Fourth new high to be followed by a three percent decline for the bull market in question.

** A major bear market low.

\$ identifies cases where the first new high was associated with a daily gain of 1.1 percent or more.

Φ Cases where the peak to trough decline in column (4) is less than the preceding peak to peak increase in column (3).

D identifies cases where the first new high occurred after a month when the dividend yield for the S&P index was equal to 3.0 percent or less.

E identifies cases where the first new high occurred after a quarter when the P/E ratio for the S&P index was equal to 20.50 or more.

G identifies peak to peak gains that may have encouraged Fed Chairman Alan Greenspan to warn investors about the possibility of irrational exuberance.

H identifies the trading day duration record, without a cumulative decline of three percent or more, for each bull market separated by cumulative declines of 13 percent or more.

P identifies declines of three percent or more that occurred during years containing a recessionary peak designated by the National Bureau of Economic Research.

Source of basic data: The Practical Forecasters' Almanac (Burr Ridge, Illinois: Irwin, 1992), Table 3.05 and Standard and Poor's Security Price Index Record.

Table 2

The Sell and Repurchase Values for the S&P Composite Stock Price Index Associated with a Strategy of Selling the Index after a First New Historic High—if the Preceding Month's Dividend Yield Was Equal to 3.0 Percent or Less—and Repurchasing It after the Next Cumulative Decline of Three Percent or More.

Sell Date	Buy Date	Div. Yield Previous Month	<i>P/E</i> Ratio Previous Quarter	S&P Closing Values on Sell Date	Buy Date	% Change S&P Index
		(1)	(2)	(3)	(4)	(5)
5/15/61	6/16/61	2.95	21.1	66.83	65.18	- 2.5
8/04/61	9/25/61	3.00	21.3	67.68	65.77	- 2.8
10/20/61	1/05/62	2.93	21.9	68.48	69.66	1.7
3/06/72	5/01/72	2.92	17.9	108.77	106.69	- 1.9*
5/24/72	6/08/72	2.83	18.5	110.31	107.28	- 2.7
8/08/72	9/12/72	2.90	18.0	110.69	108.47	- 2.0*
11/01/72	12/21/72	2.82	18.0	112.67	115.11	2.2*
1/03/73	1/26/73	2.70	18.4	119.57	116.45	- 2.6
4/06/87	4/09/87	2.90	19.3	301.95	292.86	- 3.0
9/14/92	10/02/92	2.97	23.9	425.27	410.47	- 3.5
3/08/93	4/02/93	2.81	22.8	454.71	441.39	- 2.9
8/19/93	2/24/94	2.81	22.3	456.43	464.26	1.7
2/14/95	1/10/96	2.87	15.0	482.55	598.48	24.0*
1/29/96	2/29/96	2.30	18.1	624.22	640.43	2.6*
5/13/96	7/05/96	2.24	19.0	661.51	657.44	- .6
9/13/96	12/12/96	2.22	19.2	680.54	729.82	7.2
1/10/97	2/28/97	2.01	19.1	759.50	790.82	4.1

* Percentage change in the S&P index when the *P/E* Ratio in the previous quarter in column (2) was less than 18.4.

Table 3

The Sell and Repurchase Values for the S&P Composite Stock Price Index Associated with a Strategy of Selling the Index after a First New Historic High—if the Preceding End of the Quarter *P/E* Ratio Was Over 20.50—and Repurchasing It after the Next Cumulative Decline of Three Percent or More.

Sell Date	Buy Date	<i>P/E</i> Ratio Previous Quarter (1)	S&P Closing Values on Sell Date (2)	Buy Date (3)	% Change S&P Index (4)
5/15/61	6/16/61	21.1	66.83	65.18	- 2.5*
8/04/61	9/25/61	21.3	67.68	65.77	- 2.8*
10/20/61	1/05/62	21.9	68.48	69.66	1.7*
11/12/91	11/15/91	21.8	396.74	382.62	- 3.6
12/24/91	2/18/92	21.8	399.33	407.38	2.0
7/29/92	8/24/92	23.9	422.23	410.72	- 2.7
9/14/92	10/02/92	23.9	425.27	410.47	- 3.5*
11/20/92	2/16/92	22.2	426.65	433.91	1.7
3/08/93	4/02/93	22.8	454.71	441.39	- 2.9*
8/19/93	2/24/94	23.3	456.43	464.26	1.7*
7/1/97	8/12/97	21.8	891.03	926.53	3.9

Average Percentage Change from Sell Date to Buy Date - 1.34

* Identifies cases where the dividend yield in the preceding month was equal to 3.00 percent or less. The average decline associated with these six cases is 1.38 percent.